

PRESSURE AT THE PUMP

Detergent levels fuel differences in gas quality

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Scripps Howard News Service

Buying the cheapest gasoline will keep a few extra cents in your pocket now, but it may cost you down the road.

That's because national gasoline brands differ widely in their levels of crucial engine-cleaning detergent additives, Scripps Howard News Service has found. The additives remove carbon deposits that can impair engine efficiency, reduce gas mileage and increase harmful emissions — sometimes enough for a car to fail emissions testing.

Complicating the issue: The federal Environmental Protection Agency's minimum requirement for the additives is woefully low and outdated, some automakers and fuel experts contend.

Since 1995, the EPA has required retailers to sell gas with at least a few drops of detergent in each gallon of gasoline — enough to keep deposit

buildup on a test car to less than 100 milligrams per intake valve over 10,000 miles of driving.

"The sensitivity of modern engines is much higher than it was 10 or 15 years ago," said Keith Corkwell, a manager for Lubrizol Corp., an Ohio-based chemicals company. He said the science behind the EPA rule dates to the 1980s: "We don't make engines that look like that any more. The technologies have changed."

Officials at the EPA's Washington headquarters did not respond to numerous interview requests made since February.

To gauge the differences in fuels, Scripps commissioned a test of gasoline from five national

brands: BP, Citgo, Exxon, Pilot (sold at travel centers in 43 states) and Shell.

One-gallon samples of both regular unleaded and premium fuel were collected in metropolitan Detroit on March 10 and analyzed by Paragon Laboratories, an independent, certified testing facility in Livonia, Mich.

Paragon tested each of the 10 samples, measuring the residue left when gas is boiled away. This “unwashed gum” serves as evidence of detergent. Theoretically, the more gum residue, the more detergent — and the better the gasoline.

The findings:

■ Among samples of regular unleaded gasoline (those with an octane rating of 87), Exxon had the highest level of additives (20.0 milligrams per 100 milliliters), closely followed by BP (17.2 mg) and Shell (16.2 mg). Trailing substantially were Citgo (6.0 mg) and Pilot (5.8 mg).

■ Among premium fuels (92 or 93 octane), Shell took the top spot (31.0 mg), followed by BP (26.4 mg) and Exxon (21.2 mg). Citgo (9.4 mg) and Pilot 92 (8.8 mg) lagged behind the other three brands — including the trio’s regular gasoline samples.

The Scripps test shows that “the major brands like Exxon, Shell and BP all had good amounts of detergent,” said Sal Rand, one of several fuels experts who reviewed the results. Rand retired from the Texaco Research Center.

Exxon premium scored just slightly above its regular gasoline, suggesting the company provides a similar amount of additives across its fuel lineup, said Bob Furey, a fuels-industry consultant who used to work for General Motors Corp.

Detergent amounts in the regular Exxon, BP and Shell samples likely would help keep engines clean, Furey said.

It’s impossible to tell how lower detergent levels could affect a particular vehicle, he added. Those with more than 100,000 miles tend to need more detergent, as do newer, more sophisticated models. Some can function with little detergent; all would benefit from having more.

Detergent adds 1 to 2 cents per gallon to a gas company’s production costs, Rand and Furey said.

The residue test can’t determine conclusively whether samples meet the federal minimum detergent requirement, which is based in part on detergent quality, not just quantity, Furey said. The Scripps test did not

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measure quality.

Rand, who worked extensively with Citgo, said he expected the Venezuelan company to use more additives: “I am surprised to see their detergency levels are a little bit lower than the majors.”

Citgo ensures quality through random checks, said Alan Flagg, a marketing manager.

A vice president of Pilot’s parent company, Pilot Flying J of Knoxville, Tenn., said its gas blends meet EPA requirements: “That is the standard we use,” Alan Wright said. “We don’t put in extra.”

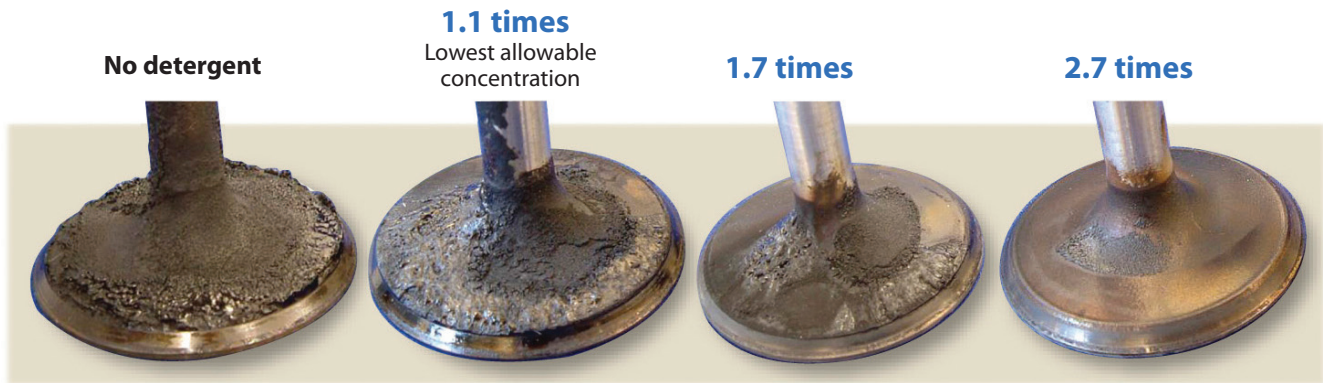
BP spokesman Scott Dean said his brand uses far more detergent than federal rules require.

Representatives of Exxon, part of ExxonMobil Corp., and Shell did not respond to interview requests.

The Scripps test provides a single-day snapshot of

The dirt on gas—detergent additives

Gasoline detergent additives remove harmful carbon deposits that collect on engine parts, including intake valves like those below, which show increasing concentrations of detergent additives:



Images courtesy of BASF

The National Institute for Automotive Service Excellence says carbon buildup can:

- Reduce fuel efficiency
- Disrupt combustion, causing engine hesitation
- Create engine “knock”
- Increase hydrocarbon emissions

relatively few samples in a single market. It replicates the approach the auto industry takes on a much broader scale, quietly conducting hundreds of spot-checks nationwide a year. But the industry doesn’t publicly share its findings.

A dirty engine, often imperceptible to drivers, has tangible effects, said Bill Studzinski, head of GM’s fuels team. It can cut gas mileage by up to 2 percent and increase emissions — sometimes enough so a car will fail emissions testing.

GM pays attention to cleaning additives because sometimes “we’ll get a rash of warranty problems related to low detergency,” Studzinski said.

The EPA’s minimum standard

Troy Green, national spokesman for the AAA auto club, said there is “very little difference, if any” among detergent quality across gasoline brands because of EPA’s minimum standard.

The EPA requires gas distributors to keep records on how much additive they use, according to agency

documents posted in the Federal Register.

Detergent gets added to generic or “base” fuel at regional distribution centers. When a 9,000-gallon tanker fills up with gasoline, electronic equipment dispenses a calibrated dose — from one to five gallons, depending on the brand, said Corkwell, of Lubrizol, a leading supplier of detergent additives.

Some engineers, automakers and fuel experts say the EPA’s minimum requirement is outmoded and far below the amount newer vehicles’ fuel-efficient engines need to run cleanly.

When a gas company or chemical maker wants EPA approval for a new additive, the chemical must be tested for 10,000 miles on a 1985 BMW 318i with automatic transmission, Corkwell said. “These cars are literally antiques. The EPA needs to think about reviewing this” regulation.

The EPA rule is outdated and should be revisited, agreed Marie Valentine, an engineer for Toyota — the world’s largest automaker — at its technical center in Ann Arbor, Mich. She said in an email that auto-indus-

try fuels experts raised this concern at a March meeting with EPA representatives.

The EPA, while declining multiple interview requests, issued a statement to the contrary.

“Currently, we don’t have data that indicate that our detergent regulations aren’t sufficient to provide adequate emissions performance,” spokeswoman Catherine C. Milbourn wrote in an April 18 email.

Ironically, after the EPA set its minimum, some gas companies reduced their detergent additive levels, automakers claim.

So, in 2004, several automakers formed a consortium to set more stringent detergent requirements and certify companies that meet its standards. The Top Tier Detergent Gasoline consortium now includes BMW, GM, Honda, Toyota, Volkswagen and Audi.

More than 20 U.S. fuel brands, including Exxon and Shell, have received the Top Tier designation.

Not Pilot.

When the Top Tier program started, “not all of our suppliers could make the extra additive available to us,” said Wright, of Pilot. “We felt that if we couldn’t offer a higher level to everyone, we just wouldn’t deviate from the required standard. In addition, we were not receiving many requests from our customers.

“That is not to say we would never consider” raising the detergent-additive level, Wright added.

Top Tier is beefing up its rules. Originally, the consortium required only that gas company executives sign pledges that their fuel met its performance standards. Now, Studzinski said, it’s instituting more rigorous testing and verification standards.